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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,513	09/26/2003	Jean Steinmetz	Q77594	8638

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EXAMINER	
ZHENG, LOIS L	
ART UNIT	**PAPER NUMBER**
1742	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/670,513	STEINMETZ ET AL.	
	Examiner	Art Unit	
	Lois Zheng	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 1-20 are amended in view of the amendment filed 16 June 2006. Therefore, claims 1-20 remains under examination.

Status of Previous Rejections

2. The previous rejections of claims under 35 U.S.C. 112, second paragraph and 35 U.S.C 101 are withdrawn in view of the claim amendments filed 16 June 2006.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 5, 8, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derule et al. US 5,683,751(Derule) in view of Emmonds et al. US 6,676,820B2(Emmonds).

Derule teaches a process for treating galvanized steel surfaces with a coating solution comprising aliphatic monocarboxylic acid with 6-12 carbons, the solution having a pH of below 7 (abstract). An example of the monocarboxylic acid is heptanoic acid(col. 3 line 35). Derule further teaches that the treated steel sheet is oiled and rolled(i.e. formed/shaped)(col. 2 lines 44-49).

Regarding claims 1-2, 5, 8, 15 and 18-19, the coating process steps as taught by Derule reads on the claimed coating process steps.

However, Derule does not explicitly teach the oxidizing condition as claimed. Emmonds teaches a process for electrocoating metal blanks by immersing metal blanks and electrodes in an electrolytic coating bath(Fig. 2).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the electrodeposition process as taught by Emmonds into the coating process of Derule in order to achieve increased paint utilization, improved corrosion protection and low environmental contamination as taught by Emmonds(col. 1 lines 19-26).

Derule's coating composition further comprises tolyltriazole in the amount of 0.5-5g/l(col. 3 lines 49-51) and the molar ratio of monocarboxylic acid salt and the triazole in the coating solution ranges from 0.4 to 10(col. 3 lines 1-5). In addition, example 3 of Derule teaches that 1.5g/l of tolyltriazole is 0.013 mole/l and 12g/l of sodium heptanoate is 0.08 mole/l(col. 5 lines 58-62). Therefore, the broadest tolyltiazole range of 0.5-5g/l is equivalent to 0.0043 – 0.043 moles/l. Based on the molar ratio of monocarboxylic acid salt and the triazole of 0.4-10, the monocarboxylic acid salt in the coating solution of Derule is calculated to be 0.00172 – 0.43 moles/l, which overlaps the claimed organic acid range of > 0.1moles/l. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed organic acid range from the disclosed range of Derule in view of Emmonds would have been obvious to one skilled in the art since Derule in view of Emmonds teach the same utilities in its' disclosed monocarboxylic acid range.

5. Claims 1-7, 10-11, 14, 16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carson et al. US 4,720,405(Carson) in view of Derule and further in view of Blum et al US 5,331,039(Blum).

Carson teaches a process for treating metal surfaces to form a protective coating(abstract, title). The coating composition comprises carboxylic acids such as azelaic acid, sebacic acid, decanoic acid and oleic acid(col. 3 lines 35-50). Carson also teaches that the coating composition can be applied to galvanized and/or aluminized steel surfaces(col. 7 lines 58-63). Carson further teaches that the coated metal substrate can then be fabricated into the desired article(col. 7 lines 8-15).

Regarding claims 1 and 18, the amount of carboxylic acid inherently taught in the coating composition of Carson would overlap the claimed carboxylic acid concentration of greater than 0.1 mole/l. Therefore, a prima facie case of obviousness exists. See MPEP 2144.04. The selection of carboxylic acid concentration range from the inherently disclosed range as taught by Carson would have been obvious to one skilled in the art since Carson teaches the same utilities in its disclosed carboxylic acid concentration range. In addition, the carboxylic acid concentration of Carson is a result effective variable. Therefore, one of ordinary skill in the art would have found it obvious to have routinely optimized the concentration of the carboxylic acids in order to achieve desired final coating properties.

In addition, one of ordinary skill in the art would have found the claimed treatment of metal surfaces before shaping obvious in view of Carson's teaching of fabricating the coated metal substrate since shaping is a form of fabrication.

However, Carson does not explicitly teach the claimed acidic pH of the coating composition. Carson also does not teach the claimed oxidizing conditions.

Derule teaches a process for treating galvanized steel surfaces with a coating solution comprising aliphatic monocarboxylic acid, the solution having a pH of below 7 (abstract).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the acidic coating solution pH as taught by Derule into the coating composition of Carson in order to prevent corrosion on the exposed steel surfaces as taught by Derule(col. 2 lines 44-49).

Blum also teaches a coating composition for metal surfaces comprising carboxylic acids such as hexanoic acid, decanoic acid, sebacic acid and azelaic acid(title, col. 5 lines 23-41). Blum further teaches suitable initiators for this polymer containing coating composition is hydrogen peroxide(col. 12 lines 37-51).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the suitable initiators such as hydrogen peroxide as taught by Blum into the coating composition of Carson in view of Derule in order to jump start the redox and polymerization reactions.

Regarding claims 2-7, Carson in view of Derule and Blum teach the claimed saturated monocarboxylic acid, the claimed unsaturated monocarboxylic acid and the claimed saturated dicarboxylic acid.

Regarding claims 10-11, Carson further teaches that suitable solvent used in the coating composition may be diacetone alcohol(col. 7 lines 33-41).

Regarding claim 14, Carson in view of Derule and Blum teach the presence of hydrogen peroxide in the coating composition, which provides the claimed oxidizing conditions.

Regarding claim 16, even though Carson in view of Derule and Blum is silent about the claimed coating weight, one of ordinary skill in the art would have found it obvious to have routinely optimized the coating weight by varying the coating time depending on the thickness of the coating desired based on the type of application.

Regarding claims 19-20, Derule further teaches that the treated metal substrate can be oiled and rolled(col. 2 lines 44-49). Therefore, one of ordinary skill in the art would have found it obvious that the claimed subsequent oiling and shaping by any techniques, including stamping or rolling, can be applied to the process of Carson in view of Derule and Blum with expected success.

6. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carson in view of Derule and Blum, and further in view of Toman US 4,877,838 (Toman).

The teachings of Carson in view of Derule and Blum are discussed in paragraph 4 above. However, Carson in view of Derule and Blum do not explicitly teach the claimed heptanoic acid.

Toman teaches applying a protective coating to metal surfaces, wherein the coating composition comprises saturated monocarboxylic acids such as heptanoic acid, octanoic acid, nonanoic acid and decanoic acid, unsaturated monocarboxylic acid such

as oleic acid and saturated dicarboxylic acid sucha s azelaic acid and sebacic acid(col. 6 line 55 – col. 7 line 11).

Therefore, one of ordinary skill in the art would have found the claimed mixed presence of both heptanoic acid and decanoic acid in the coating composition of Carson in view of Derule and Blum obvious since Toman appears to teach that heptanoic acid and decanoic acid are functionally equivalent.

7. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carson in view of Derule and Blum, and further in view of Hughes et al. US 6,206,982 B1 (Hughes).

The teachings of Carson in view of Derule and Blum are discussed in paragraph 4 above. However, Carson in view of Derule and Blum do not explicitly teach the addition of rare earth metals in the +3 oxidation state as claimed.

Hughes teaches the application of a conversion coating to metal surfaces, wherein the conversion coating comprises rare earth metals in +3 oxidation state(col. 3 line 61 – col. 4 line 15) and in a concentration of below 50g/l(col. 4 lines 24-26). The coating composition of Hughes further comprises mono- and/or di-carboxylic acids(col. 6 lines 53-49).

Regarding claim 8, it would have been obvious to one of ordinary skill in the art to have incorporated rare earth metal in +3 oxidation state and in a concentration of below 50g/l as taught by Hughes into the coating solution of Carson in view of Derule and Blum in order to improve the adhesion of the conversion coating and accelerate the coating process as taught by Hughes(col. 2 lines 1-3).

In addition, the concentration of rare earth metal in the coating composition of Carson in view of Derule, Blum and Hughes overlaps the claimed concentration of greater than or equal to $1x10^{-3}$ mole/l. Therefore, a prima facie case of obviousness exists. See MPEP 2144.04. The selection of claimed rare earth metal concentration range from the disclosed range of Carson in view of Derule, Blum and Hughes would have been obvious to one skilled in the art since Carson in view of Derule, Blum and Hughes teach the same utilities in their disclosed rare earth metal concentration range.

Furthermore, the pH of the coating solution of Carson in view of Derule, Blum and Hughes overlaps the claimed pH of higher than 4. Therefore, a prima facie case of obviousness exists. See MPEP 2144.04. The selection of claimed pH range from the disclosed range of Carson in view of Derule, Blum and Hughes would have been obvious to one skilled in the art since Carson in view of Derule, Blum and Hughes teach the same utilities in their disclosed pH range.

Regarding claim 13, even though Carson in view of Derule, Blum and Hughes do not explicitly teach that the rare earth metal is claimed gadolinium, one of ordinary skill in the art would have found the use of gadolinium as the rare earth metal in the coating composition of Carson in view of Derule, Blum and Hughes obvious and with expected success since gadolinium has similar properties as other rare earth metals, therefore, should behave similarly to other rare earth metals taught by Hughes.

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carson in view of Derule and Blum, and further in view of Emmonds et al. US 6,676,820B2 (Emmonds).

The teachings of Carson in view of Derule and Blum are discussed in paragraph 4 above. However, Carson in view of Derule and Blum do not explicitly teach the claimed oxidizing condition caused by an electric current with metal surface and at least one electrode being immersed.

Emmonds teaches a process for electrocoating metal blanks by immersing metal blanks and electrodes in an electrolytic coating bath(Fig. 2).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the electrodeposition process as taught by Emmonds into the coating process of Carson in view of Derule and Blum in order to achieve increased paint utilization, improved corrosion protection and low environmental contamination as taught by Emmonds(col. 1 lines 19-26).

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carson in view of Derule and Blum, and further in view of Melotik US 3,969,152(Melotik).

The teachings of Carson in view of Derule and Blum are discussed in paragraph 4 above. However, Carson in view of Derule and Blum do not explicitly teach the claimed post treatment using a bath containing rare earth metals.

Melotik teaches an post treatment rinse for metal coatings, wherein the post treatment rinse solution is comprises at least 0.0005M of rare earth metal(col. 3 lines 20-27). Table II of Melotik further shows that an example of rare earth metal salt is cerous nitrate(i.e. Ce^{3+}).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the post treatment coating process of Melotik into the coating process of

Carson in view of Derule and Blum in order to substantially increase the corrosion and humidity resistance of conversion coated metal surfaces and to improve the surface's receptivity to subsequent adherent coats of paint as taught by Melotik(col. 1 lines 42-59).

In addition, the rare earth metal concentration in the post treatment solution as taught by Carson in view of Derule, Blum and Melotik overlaps the claimed rare earth metal concentration of greater than or equal to $1x10^{-3}$ mole/l. Therefore, a prima facie case of obviousness exists. See MPEP 2144.04. The selection of claimed rare earth metal concentration range from the disclosed range of Carson in view of Derule, Blum and Melotik would have been obvious to one skilled in the art since Carson in view of Derule, Blum and Melotik teach the same utilities in their disclosed rare earth metal concentration range.

Response to Arguments

10. Applicant's arguments filed 16 June 2006 have been fully considered and are partially moot in view of the new grounds of rejection.

Applicant arguments that Derule does not teach the claimed oxidization conditions and the claimed organic acid concentration of greater than 0.1,ole/l are moot in view of the new grounds of rejection discussed above.

Applicant further argues that the carboxylic acid taught by Carson is directed to the acid component of a polyester used in the coating composition. The examiner does not find applicant's argument persuasive since the presence of carboxylic acid is required in order to form the polyester. Therefore, there will be carboxylic acid in the

coating solution as claimed. In addition, the coating bath as claimed uses open transitional phrase "comprising" which does not limit the presence of the additional components in the coating solution. It is the examiner's position that the coating solution of Carson contains the claimed carboxylic acid.

Applicant further argues that Carson does not teach the claimed a carboxylic acid concentration of more than 0.1 mole/l. The examiner does not consider this argument persuasive since the concentration of carboxylic acid is a result effective variable that affects the final coating layer. Therefore, one of ordinary skill in the art would have found it obvious to have routinely optimized the concentration of the carboxylic acids in order to achieve desired final coating properties.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LLZ

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